CHAPTER 2
PROJECT PLANS

The purpose of Chapter 2 is to provide the designer with the guidance to present design information on a final set of project plans.

SECTION 2-1
GENERAL GUIDELINES AND STANDARDS FOR PREPARING PROJECT PLANS

2-1.1 General Guidelines

Project plans contain plan sheets that are specific to that advertised project. Project plan sheets contain details and dimensions specific to the project work. Project plans are supplemented by the Caltrans Standard Plans. Do not include the drawing of a standard detail as it is shown in the Caltrans Standard Plans. The project plans need only call out the name of that particular standard detail (example: AC Dike, Type A), when applicable to the project. If a standard detail needs to be modified and included in a specific project, follow the instructions in "Use of Standard Plans" in Section 2-1.4 of this manual.

A set of project plans needs to be complete and concise and to clearly identify all items of work that a competent contractor can easily interpret and build. Eliminate extraneous information not directly related to that specific project plan sheet. Background topography should not generally be shown outside the right of way unless the design or construction of the project (or specific sheet) requires it. The ultimate goal is to communicate clearly with bidders, contractors, and the Resident Engineer.

All projects shall have at least two sheets, a title sheet and one other showing proposed work.

The layouts are the base plan sheets and all plan sheet information can be shown on them. If the layouts become too crowded or cluttered, other plan sheets should be used to clearly show the proposed work (i.e. drainage, utilities, signing, striping, etc).

Some projects do not need layouts to show the proposed work. If the detail and quantity sheets (along with the special provisions) can clearly and concisely show and explain the proposed work, then layouts (or any other plan sheets) may not be necessary.

Group similar or inter-related items of work on the same plan sheets (i.e. signing and striping). Avoid one item of work on one type of plan sheet if it can easily be combined on another similar type plan sheet (unless too crowded or cluttered). The fewer and simpler the sheets, the more concise and understandable the final plans will be.

Do not include plan sheets that do not contain work to be performed as part of the project, not even layouts. Use break line symbols and gaps in stationing on the plan sheets to reflect the length of highway where no work is to be performed. Not all layout sheets will have corresponding drainage, utility, and striping sheets. If there is no work of that nature being performed on that portion of the project, do not show that kind of sheet for that length of highway.

Right of way shown on any plan sheet shall be depicted with a solid line. Where right of way is shown on any plan view sheet, include the following note on each plan sheet, "For complete right of way and accurate access data, see right of way record maps at district office."

In the case of a conventional highway, omit the words "and accurate access" from the note.

Typically, the right of way note is placed in the upper left corner of the sheet.

Use of the right of way note on each plan view sheet, that shows right of way, is necessary to notify subcontractors who typically perform work shown only on one particular type of plan sheet (example: Signal and Lighting). These subcontractors typically do not have the project layout sheets that include the right of way note.

Right of way should only be shown on those plan sheets where right of way has an impact on the project. It should not be on each sheet just because the right of way is shown in the base mapping.

All items of work shall be clearly identified so quantities can be determined from the labeling and dimensioning on plan, profile or detail sheets. A bidder or contractor shall never be required or expected to scale from a hard copy print of the project plans in order to determine a quantity.

Labeling of items of work identified on plan, profile, and detail sheets shall be consistent with the labeling as it appears in the quantity tables, Engineer's Estimate and special provisions. Quantities should be easy to identify, calculate and locate for all items of work.

In general, when identifying physical features, first describe the item, then the spacing, and then the total number of items (i.e. 10' steel poles @ 20' centers, total 4). See Section 2-1.3 for additional instructions for dimensioning and locating construction features.

Where items of work are identified by stationing, plan sheets must include alignment lines so that offset distances can be referenced to known stationing. Minor projects, designed using only post miles in place of stationing, shall identify locations to the tenth of a post mile.

If the quantity for the same item of work is shown on more than one quantity table, the sub-totals from each quantity table are to be added together and displayed as a grand total on the quantity table most logically associated with that item of work.

If there is a discrepancy between the project plans and the special provisions, the special provisions take precedence in any claim or disagreement between the contractor and the Department. When developing a set of project plans, the project engineer must keep in mind the special provisions and how these two parts compliment each other.

2-1.2 Drafting Conventions and General Standards

Good drafting can enhance and clarify the readability of the project plans. A perfectly engineered project is only perfect if it can be easily read and understood by the bidders, winning contractor and the construction inspector. While developing the project, the designer must always keep in mind the people who will read and interpret the plans.

Clarity and consistency are two of the important aspects of good drafting practices.

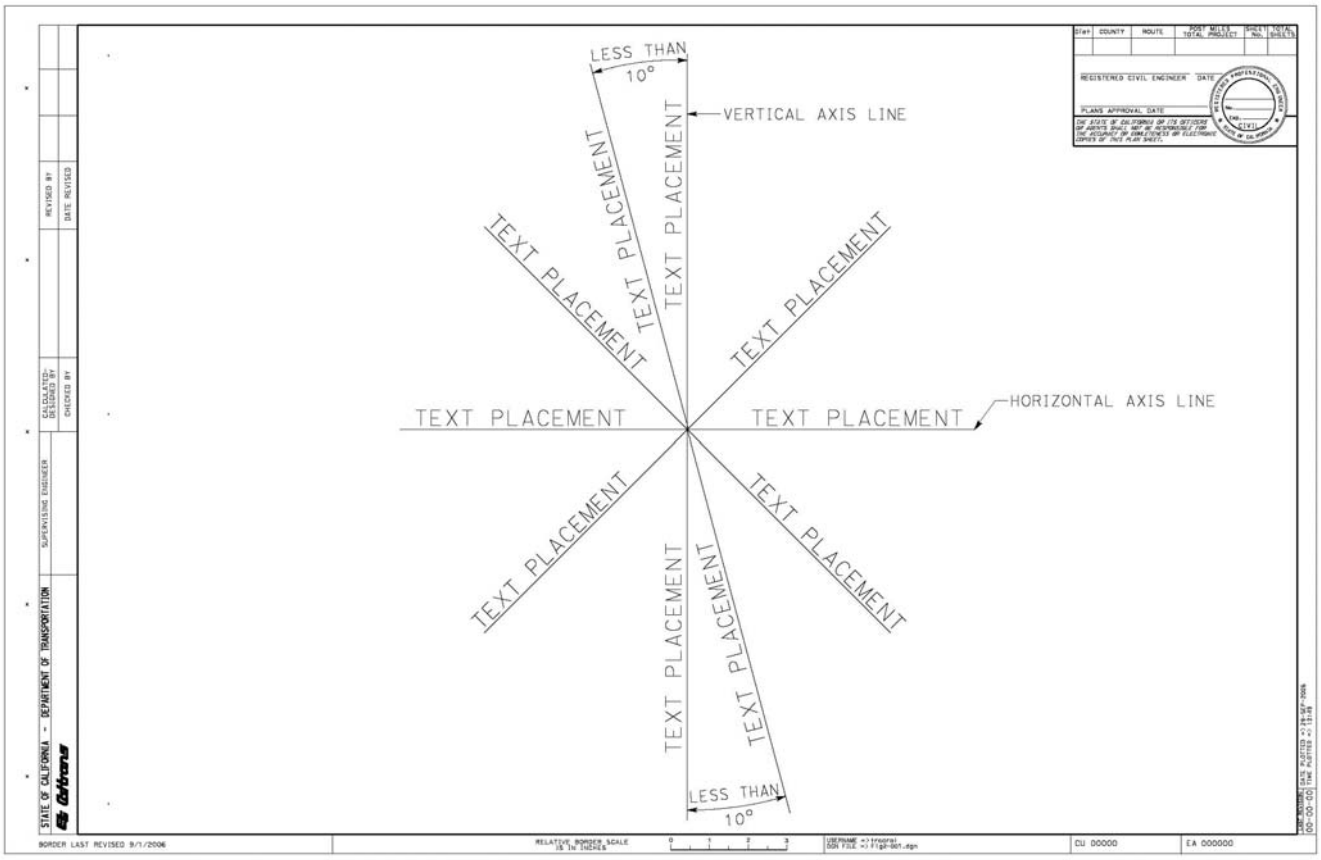
Consistency in following Caltrans drafting conventions and general standards when developing project plans will promote clarity and familiarity with all Caltrans advertised projects.

General drafting conventions and standards include:

- Line weights, line styles and graphical representations of features conforming to the CADD Users Manual, the Standard Plans, and this manual.

TEXT PLACEMENT AND READING DIRECTION

FIGURE 2-1



- Abbreviations, acronyms, symbols and symbology conform to Standard Plans A10A through A10D, H1 and H2, and ES-1A through ES-1C. Caltrans has established, by long standing practice, the use of an uppercase letter at the beginning of a single word abbreviation followed by lowercase letter(s). This format for abbreviations shall be used.

- Text sizes conform to Section 2-6 of the CADD Users Manual. (Caltrans preference is the use of uppercase text, because it is easier to distinguish characters within the text message.)

- Placement of text, as shown in Figure 2-1, typically reads left to right. Some numeric text is placed along vertical lines (i.e. BC and EC alignment annotation and matchlines). This text reads bottom to top.

- Placement of text should be consistent and legible throughout the project. Text is generally placed above the line work, if a leader line is not used. Where a leader line is used to label an item of work or the limits of an item of work, place the leader line so that the text will read from left to right.

- Placement of text should not break line work or shapes.

- Leader lines with or without arrowheads are used to label items of work. Use of arrowheads should be dependent on whether their addition would create more clutter and reduce the legibility of the information to be shown. Leader lines without arrowheads are generally used to identify station limits of an item of work. Be consistent in the use of leader lines and arrowheads.

- Plus stations for identifying both begin and end points of the items of work and offset distances are shown to the nearest foot or tenth of a foot depending on the type of work. In those cases where a greater degree of accuracy is needed, identify begin and end limits of items of work or offset distances to hundredths of a foot. Where multiple items of work begin or end at the same plus station, use one extension line from the plus station to identify each item of work in a stacked group. If sheets are very cluttered, an alternative method is to identify only the begin point of the items of work and include the overall actual length of each item of work. Be consistent throughout the plans in the method used to identify the limits of the items of work.

- Sheet match lines are placed perpendicular to the alignment line, where practical, and generally located halfway between station tick marks (i.e. +50). Refer to placement of text as shown in Figure 2-1.

- Be consistent in placement of legends, notes or disclaimer information. Place at the same location on plan sheets within a project and at the same location for all projects.

2-1.3 U.S. Customary Unit Standards

Dimensions and Locations of Construction Features

Dimensions of existing features should reflect their actual values. Dimensions of new features should reflect the required values to accurately construction the feature. Dimensioning, in general, should reflect the accuracy of the equipment required to construct the feature.

The use of feet and decimals of a foot for dimensions versus the use of feet and inches should be based on the item of work involved. Pavement structure work is dimensioned by the foot and decimals of foot (see Section 2-2.3). Formed concrete construction features (bridges, walls, drainage features, curbs, sidewalks, etc.) are dimensioned in feet, inches and fractions of inches. Generally, manufactured or fabricated items are dimensioned in feet, inches and fractions of inches. The Caltrans Standard Plans should be used as a guide to determine whether a dimension should be expressed in feet and decimals of a foot or feet and inches.

Dimensions in feet, tenths of a foot or hundredths of a foot are to be shown with an accompanying apostrophe (symbol for foot). Where a dimension is to be displayed in tenths or hundredths of a foot and the dimension is less than one foot, use a zero in front of the decimal point (example: 0.2', 0.35').

Dimensions in inches are to be shown with an accompanying quotation mark (symbol for inch). Where a dimension is to be displayed in feet and inches and the dimension is one foot or greater, place a hyphen between the foot and inch values, (example: 1'-0", 2'-3", 10'-$^1/_2$"). Where a dimension is displayed in inches and the dimension is less than one foot, do not use the foot designation or hyphen in advance of the inch value, (example: 6", not 0'-6"). Do not use notes such as, "All dimensions are in feet unless otherwise shown," on the project plan sheets.

Fractions of a foot shall not to be used in dimensions (example: $10^1/_2$').

With few exceptions, construction features are tied to station alignment, plus stations, and offset distances from alignment lines. Depending on the accuracy required, construction features are shown to the nearest foot, tenths of foot or hundredths of foot.

Bearings of Lines and Angular Identification

Bearings for all alignments shall be Degree-Minute-Second. Angles used to depict a detail shall be shown in the conventional mode (i.e. 57.5^o).

Cross Slopes

Pavement cross slopes and superelevations shall be shown as percents.

Side Slopes

Side slopes shall be expressed in a nondimensional ratio. The horizontal component is shown first and then the vertical (X:Y). When a side slope becomes steeper than 1:1, the horizontal component shall be shown as a fraction such as 3/4:1.

Flares and Tapers

Flares and tapers shall be expressed in a nondimensional ratio. The longitudinal component is shown first and then the lateral offset component (example: 20:1, 15:1, etc.).

Scales

For plan sheets, a horizontal scale of 1" = 50' (base scale) should be used in urban areas and some rural areas. A horizontal scale of 1" = 20' is used where greater detail is required than can be shown on the plan layouts. These sheets would typically be used for signal and lighting plans, etc. For projects in rural areas, a horizontal scale of 1" = 100' may be used. Where a horizontal scale of 1" = 50' is used and just a few items of work are involved, the roadway layout information may be stacked one above the other on the same plan sheet.

For profile sheets, the following scales are commonly used for the condition described:

- Rural sections in hilly or mountainous terrain: 1" = 10' vertical and 1" = 100' horizontal
- Rural or urban with gentle rolling terrain: 1" = 5' vertical and 1" = 50' horizontal
- Rural or urban with level terrain: 1" = 2' vertical and 1" = 20' horizontal

Vertical to horizontal scale ratios producing profile grade line plots steeper than 1:1 should be avoided because it overly distorts the actual field conditions. Scale ratio of horizontal to vertical (H/V) = 10 is typically used.

Contour lines shall be as follows:

Plotting Scale	Index Contours	Intermediate Contours
1" = 20'	5'	1'
1" = 50'	10'	2'
1" = 100'	20'	4'
1" = 200'	50'	10'
1" = 400'	100'	20'

The index contour line will be every fifth contour and will be a heavier weight than the intermediate contour lines. In very steep terrain (at any scale), the intermediate contours may be eliminated if the contour lines are so close together that they affect the readability of the mapping or plans.

When developing geographically oriented drawings, use actual coordinate values. Caltrans does not draw to scale, it only plots to a given scale.

Individual nongeographical oriented drawings, such as typical cross sections and detail sheets, do not need to be drawn to scale. The details are generally drawn proportionally, but the dimensions shown will govern over the image. These sheets are labeled "No Scale." If objects of different sizes are to be shown on the same detail sheet, one or both of the details may be enlarged or reduced to provide a balanced appearance on the sheet. If an object can not be shown in its entirety and the elements of the object are repeated uniformly, then a break line may be used, but the total length or width shall be shown.

Earthwork cross section plotting scales, both horizontal and vertical, should be 1" = 10' for rural projects and 1" = 5' for urban projects. Cross section intervals shall not be greater than 50 feet.

Stationing

Plan sheet stationing shall be based on 100 feet per station with full annotation at 500 foot stations (multiple of 5). Annotation at 100 foot stations is a single digit number (the ones column). With the exception of precise stationing required at equations, BCs, ECs, and POCs, annotation for whole stations shall not include plus stations (i.e. +00). Refer to the plan sheet examples in Section 2-2 of this manual for stationing annotation examples. Precise stationing in U.S. customary units is expressed to the hundredth of a foot.

Stationing for preliminary drawings shall also be based on 100 feet per station and with full annotation at 500 foot stations for both 1" = 200' and 1" = 400'. The 100-foot stations do not need to be annotated.

The typical length of a station tick mark (in a MicroStation design file) is 2.8' at 1" = 20' scale, 7.0' at 1" = 50' scale and 14.0' at 1" = 100' scale. Station tick marks are centered on the alignment line. Annotation is placed below the alignment line. Station annotation is generally located one-half the height of the text below the tick mark. For those situations when station annotations would obscure a construction feature, the interfering annotations may be placed further below the tick mark.

Units and Symbols of Measurement

The unit symbols of measurement as defined in Standard Plan A10B shall be used. These unit symbols of measurement are to be used for the items of work shown on a plan sheet, the quantity summaries and the Engineer's Estimate so that they will match those used in the Basic Engineering Estimating System (BEES). The BEES has field limitations and will not accept upper and lower case unit symbols of measurement.

2-1.4 Use of Standard Plans

Caltrans Standard Plans are approved standardized details that are applicable to the construction of highway facilities. The Standard Plans are divided into sections designated by an alpha prefix:

- "A" - Pavement delineation, excavation and backfill details, barriers, guard railing, crash cushions, fencing, curbs, dikes and curb ramps
- "P" - Pavements
- "C" - Crib walls
- "D" - Drainage items
- "H" - Planting and Irrigation
- "T" - Temporary facilities
- "B" - Bridge related work, retaining walls, and sound walls
- "RS" - Roadside signs
- "S" - Overhead signs and sign panels
- "ES" - Electrical systems

All engineers and detailers should have a copy of the current Standard Plans book and be familiar with its contents.

The Standard Plans book is updated and issued at regular intervals, usually at 3-5 year intervals by the Division of Engineering Services-Office Engineer (DES-OE). The DES-OE issues new or revised standard plan sheets when the need arises. Revised standard plans (RSPs) replace the comparable sheets in the current edition of the book. New standard plans (NSPs) supplement the current edition of the book.

The Standard plans applicable to a specific project are indicated by the use of the "Standard Plans List" standard special provision which is included in the project special provisions. This list is updated in conjunction with the issuance of new or revised standard plans. Where revised or new standard plans are applicable to a project, they should be indicated on the "Standard Plans List" standard special provision. DES-OE will insert the indicated applicable revised or new standard plans as plan sheets into the project plan set. For AADD projects, the district submitting the project will be responsible for the insertion of applicable revised or new standard plan sheets as part of the project plan set.

The design section responsible for the project is to verify that the applicable standard plans, revised standard plans and new standard plans are identified on the current "Standard Plans List" standard special provision sent to the DES-OE as part of the PS&E submittal.

Caltrans standard plans are available via the Caltrans DES-OE Internet web site in several electronic formats.

The MicroStation design files are provided on the web site to assist project designers where a standard plan detail does not fit a given situation and must be modified. Only the individual modified detail or details from the standard plan, not the entire standard plan detail sheet, are to be included in the applicable detail sheet of the project plan (construction details, drainage details, etc.) and labeled modified. If minimal changes are made, show only the modifications with a reference to the applicable standard plan.

For AADD projects, Caltrans personnel may access signed tiff file formats of revised and new standard plans via the Caltrans internal network for submittal of complete electronic files of the plan set.

2-1.5 Plan Border Sheets

Plan border sheets contained in the Caltrans CADD English Cell Library are to be used for project plan preparation. The English Cell Library is available at this web site:

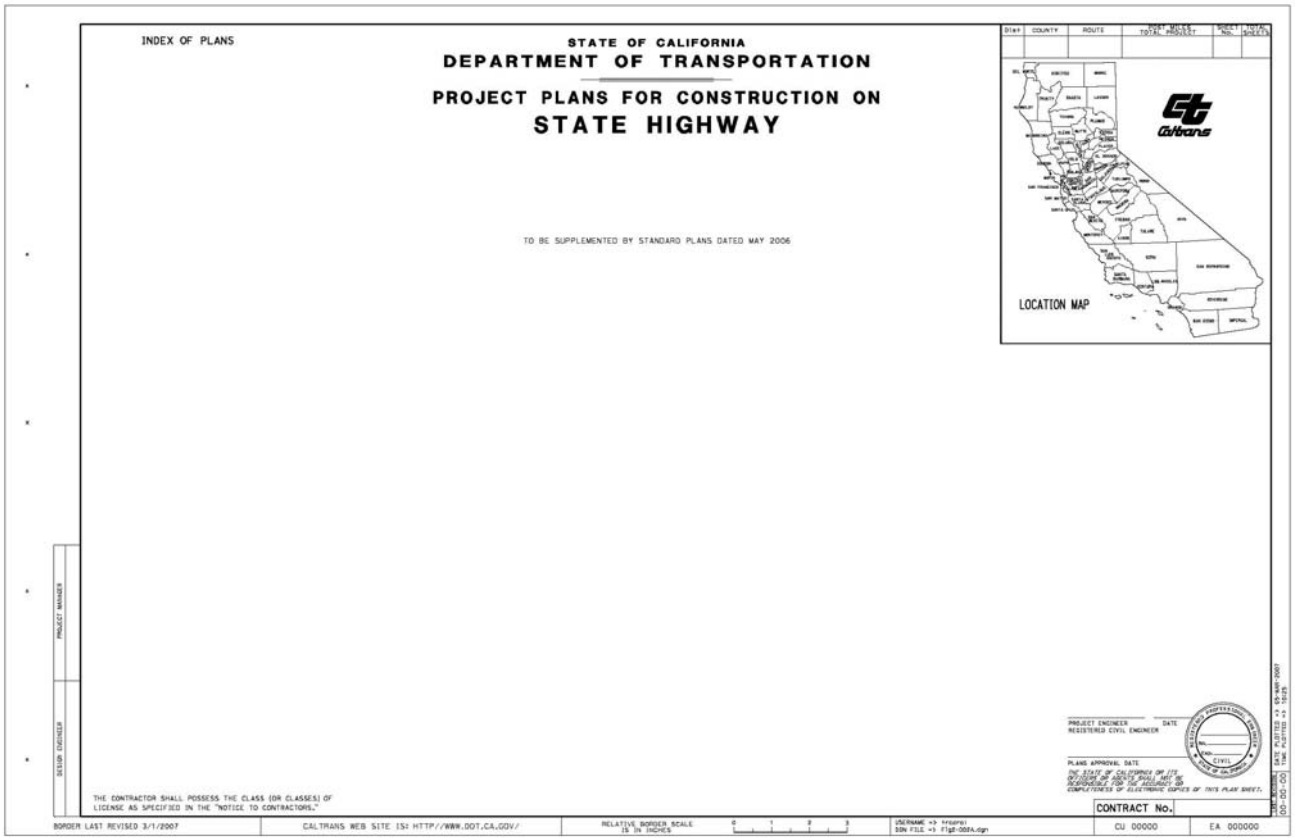
http://www.dot.ca.gov/hq/oppd/cadd/rsc_files/webpage.htm

The figures contained herein depict the various plan border sheets.

BASIC BORDERS FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2A

Border for Title Sheet of Caltrans Prepared Projects

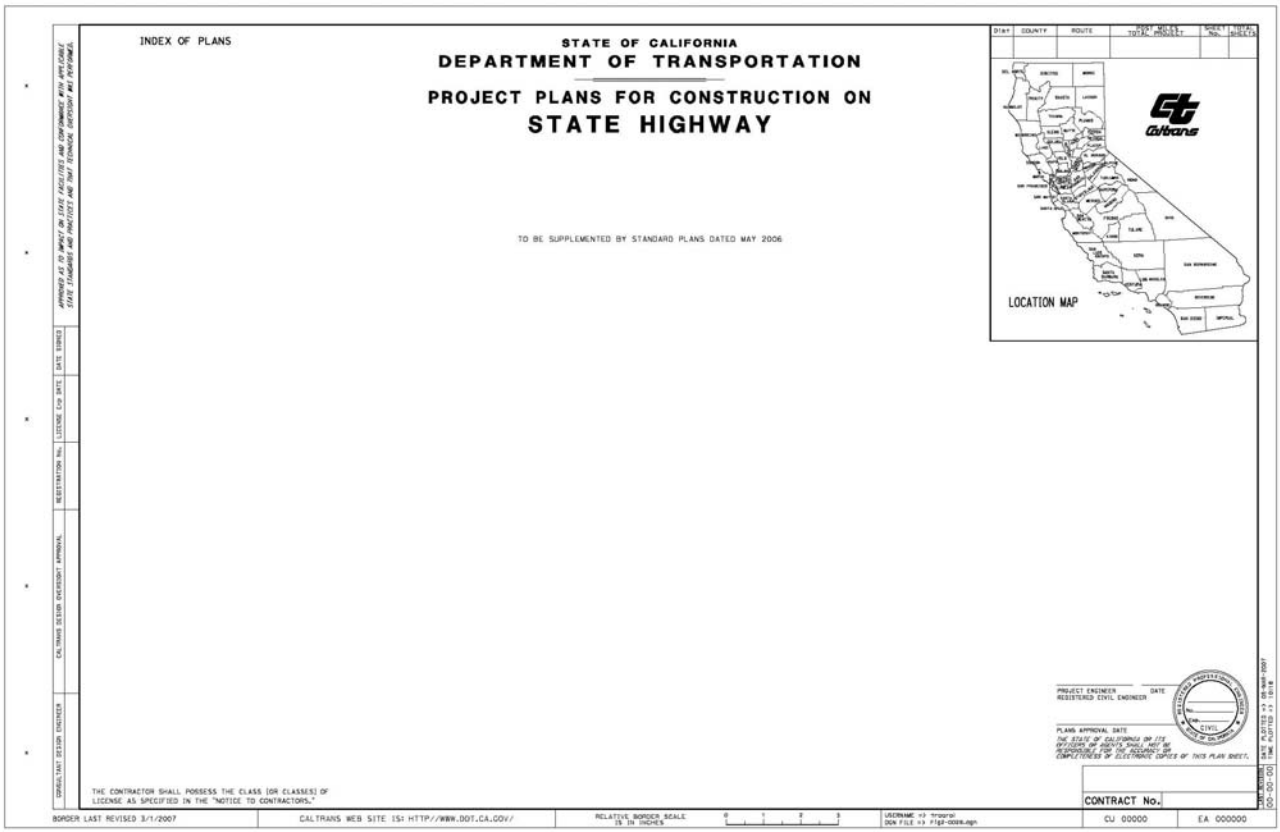


The name of the cell for this title sheet border is AC = TITLE.

BASIC BORDERS FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2B

Border for Title Sheet of Consultant Prepared Project for Caltrans

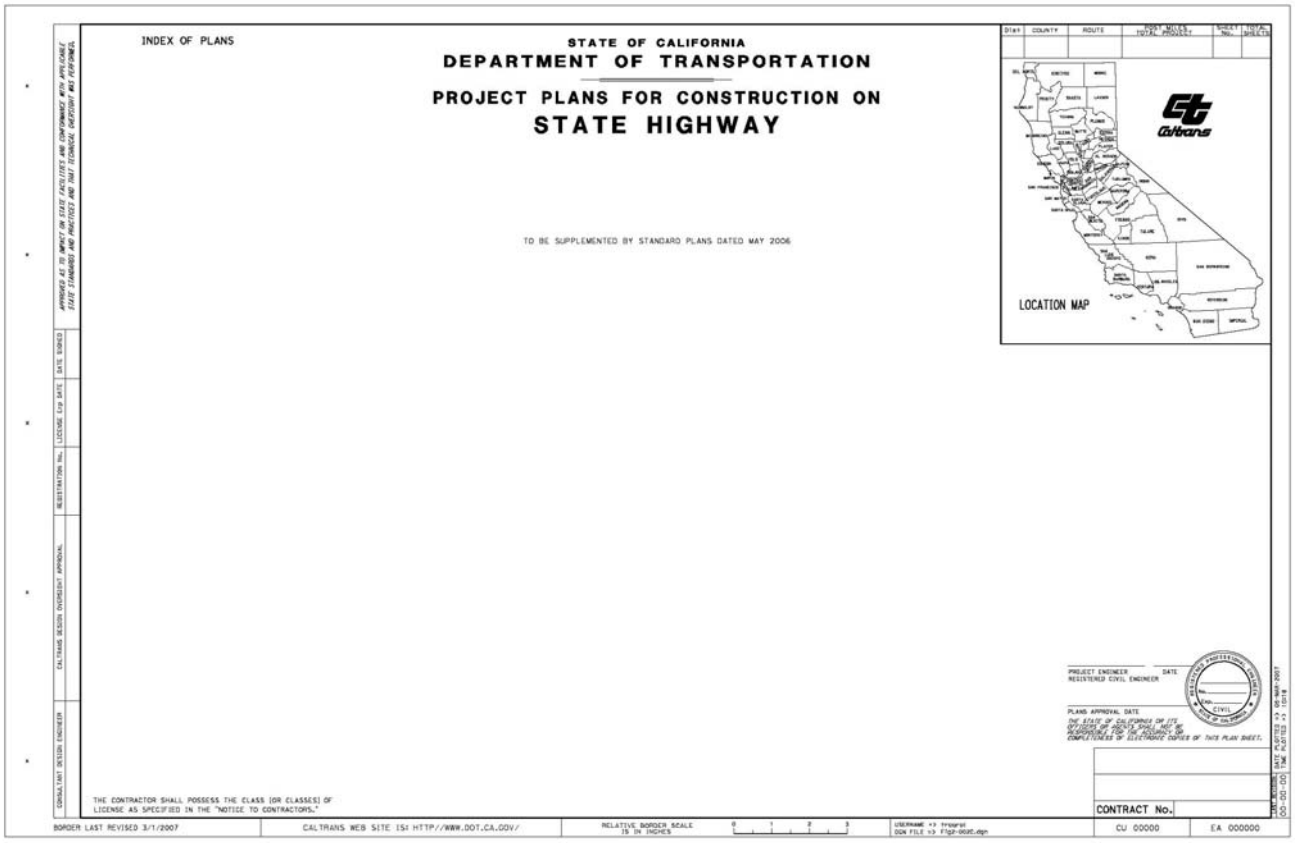


The name of the cell for this title sheet border is AC = TITLE2.

BASIC BORDERS FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2C

Border for Title Sheet of Consultant Prepared Project for Local Agency

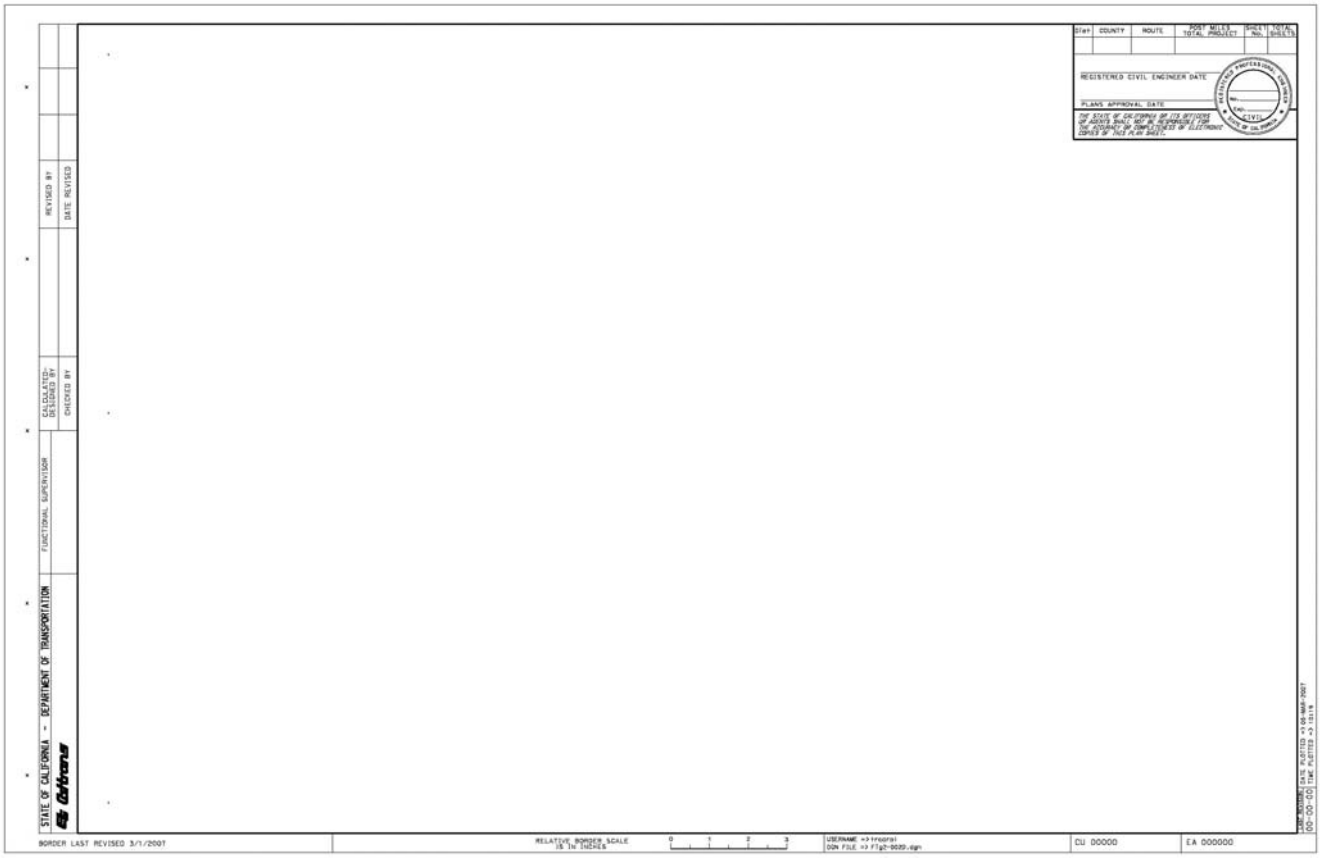


The name of the cell for this title sheet border is AC = TITLE3.

BASIC BORDER FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2D

Border for Most Plan Sheets Prepared by Caltrans

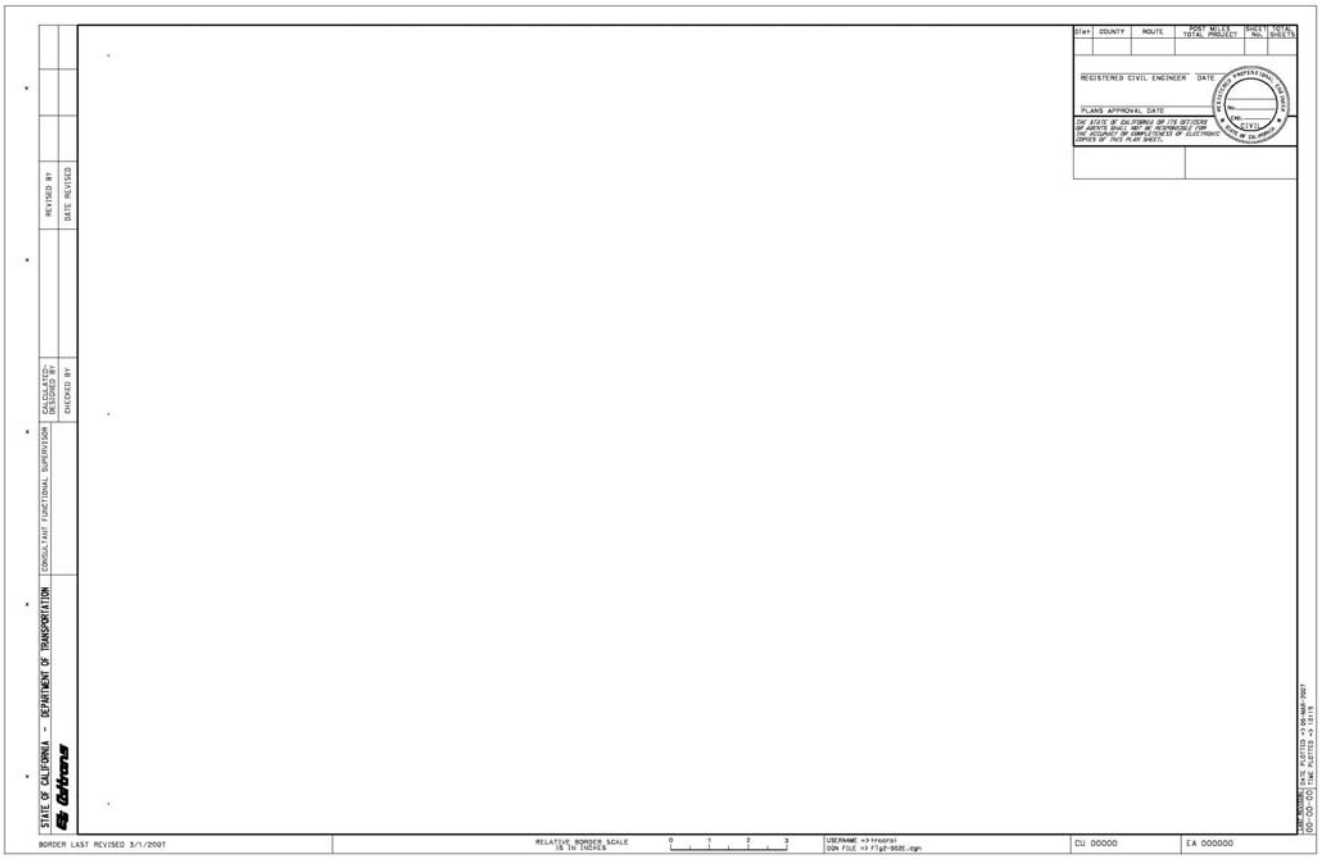


The name of the cell for this border sheet is AC = FULPLN. Use for layouts, typical cross sections, drainage details, construction details, contour grading, sign plans, quantity sheets, etc.

BASIC BORDER FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2E

Border for Most Plan Sheets Prepared by a Consultant for Caltrans or a Local Agency

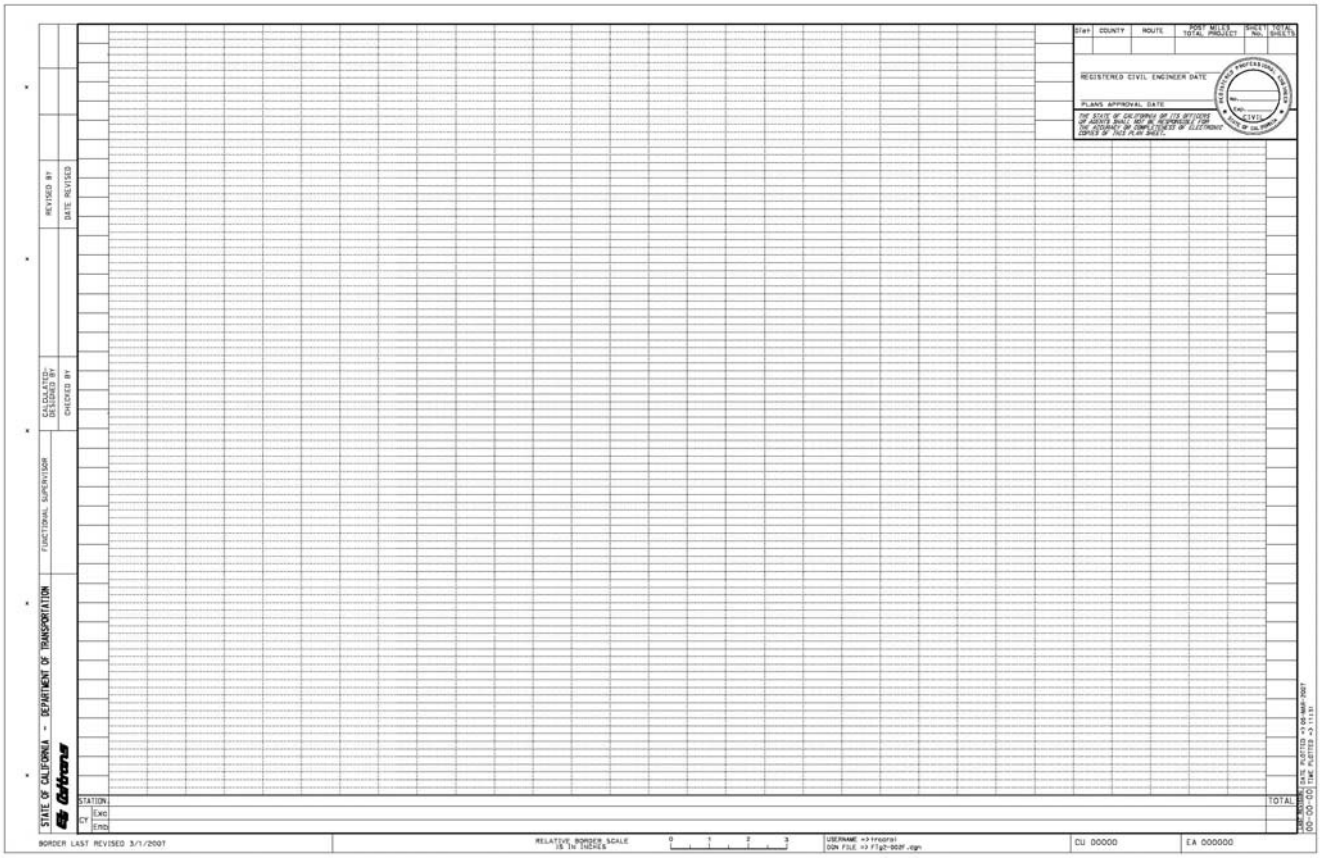


The name of the cell for this border sheet is AC = FUPLN2. Use for layouts, typical cross sections, drainage details, construction details, contour grading, sign plans, quantity sheets, etc.

BASIC BORDER FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2F

Border Sheet with Full Profile Grid Insert for Caltrans Prepared Projects



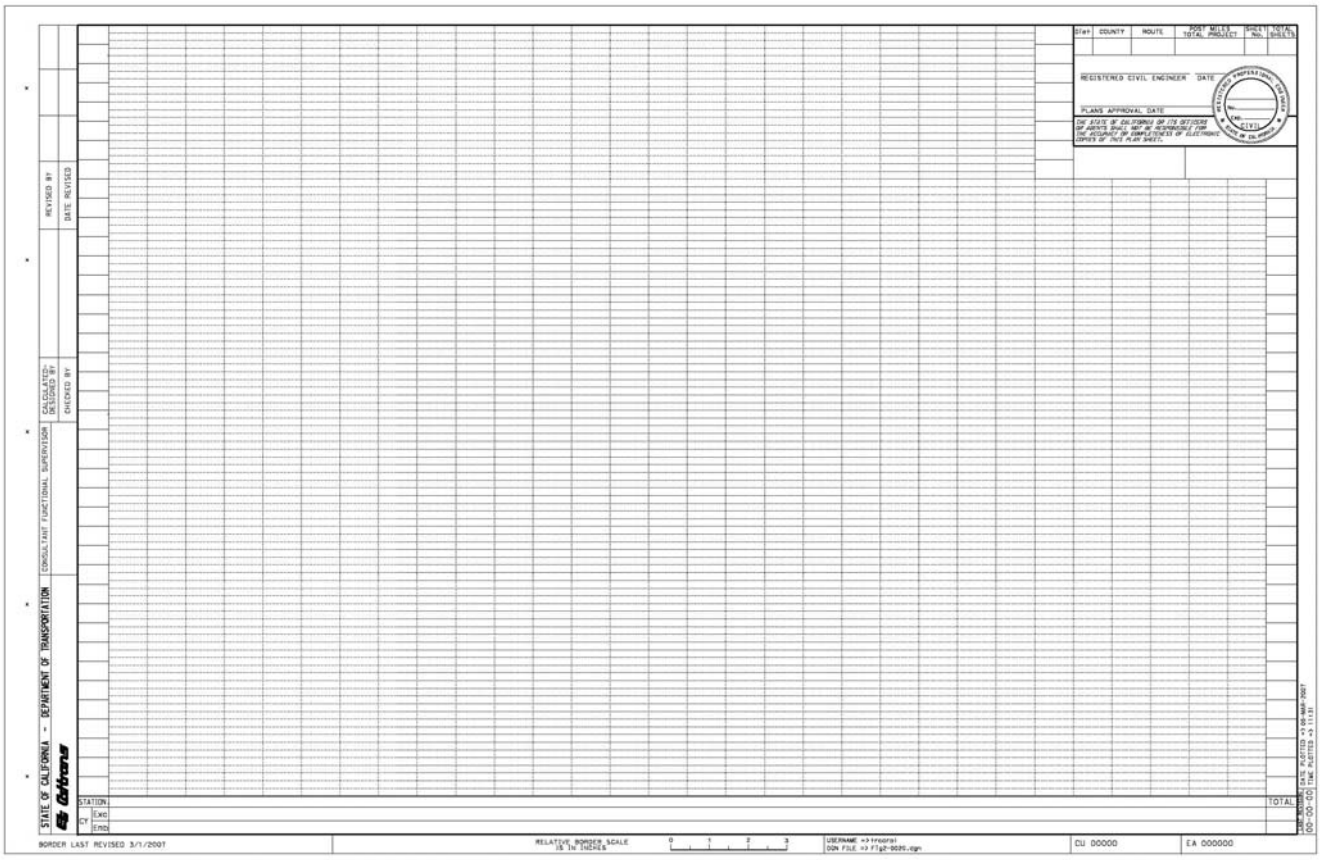
The name of the cell for this border sheet is AC = FULPLN. The name of the cell shown for this full profile grid insert is AC = PROFIL and it is used for the 1" = 50' Caltrans base scale. Two new profile grid inserts for the other Caltrans plotting scales are available. These new grid inserts are for use with the 1" = 100' scale (cell name AC = PRF100) and 1" = 20' scale (cell name PRFL20). Use these grid inserts for roadbed profiles and superelevation diagrams. Where these grid inserts are used for roadbed profiles, show earthwork quantities along the bottom of the sheet.

Two new additional grid inserts are available for use with this border sheet to depict drainage profiles, sewer profiles, etc. Their cell names are AC = GRID1 and AC = GRID2.

BASIC BORDER FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2G

Border Sheet with Full Profile Grid Insert for Consultant Prepared Projects for Caltrans or a Local Agency



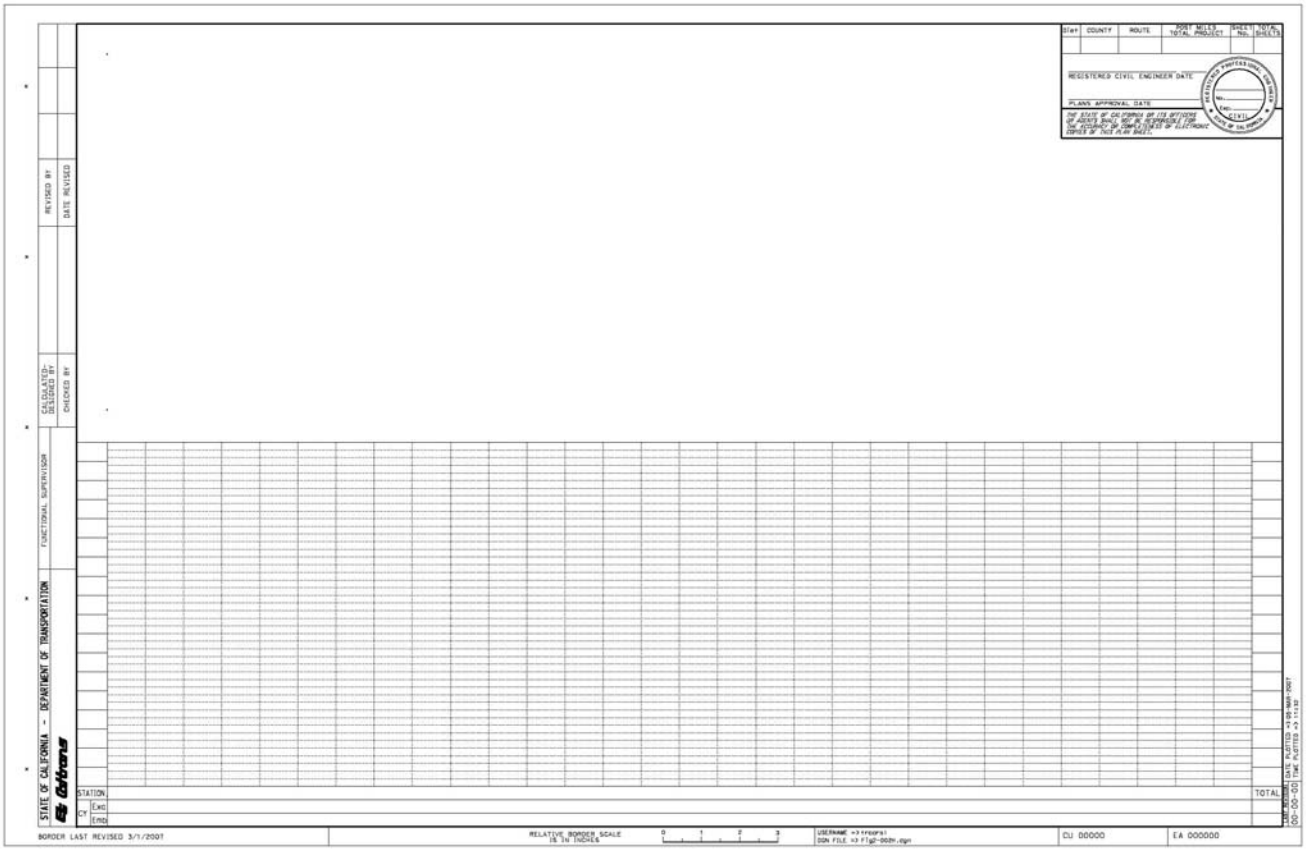
The name of the cell for the border sheet is AC = FUPLN2. The name of the cell shown for this full profile grid insert is AC = PROFL2 and it is used for the 1" = 50' Caltrans base scale. Two new profile grid inserts for the other Caltrans plotting scales are available. These new grid inserts are for use with the 1" = 100' scale (cell name AC = PROFL3) and 1" = 20' scale (cell name PROFL4). Use these grid inserts for roadbed profiles and superelevation diagrams. Where these grid inserts are used for roadbed profiles, show earthwork quantities along the bottom of the sheet.

Two new additional grid inserts are available for use with this border sheet to depict drainage profiles, sewer profiles, etc. Their cell names are AC = GRID1C and AC = GRID2C.

BASIC BORDER FOR THE PREPARATION OF PROJECT PLANS

FIGURE 2-2H

Border Sheet with Partial Profile Grid Insert



NOTES:

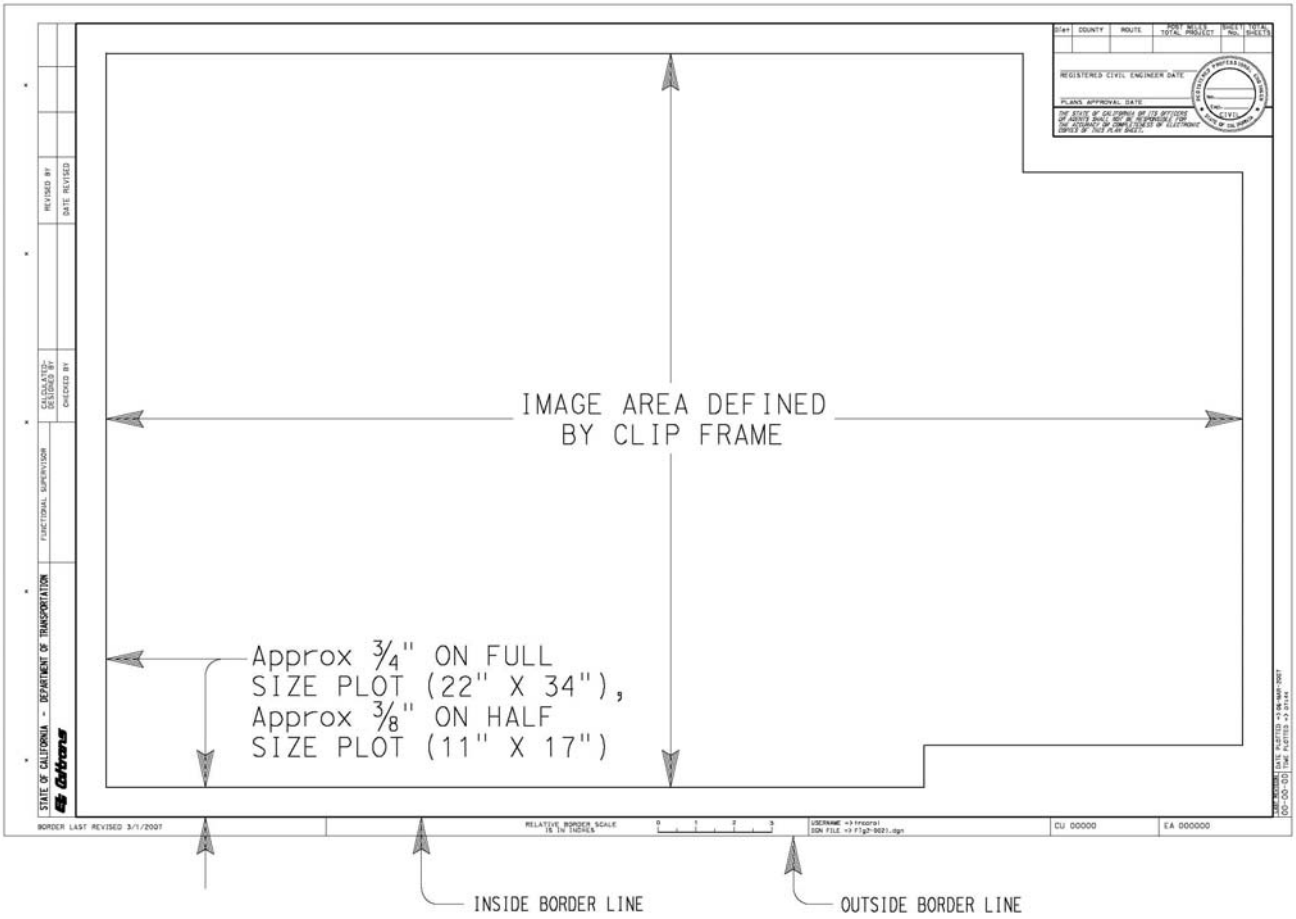
1. The name of the cell shown for this border sheet for Caltrans prepared projects is AC = FULPLN. The name of the cell for the partial profile grid shown is AC = PLNPRO. It is used for the 1" = 50' Caltrans base scale. Two new partial profile grid inserts for the other Caltrans plotting scales are available. These new grid inserts are for use with the 1" = 100' scale (cell name AC = PLP100) and 1" = 20' scale (cell name PLPR20). Use these grid inserts for roadbed profiles and superelevation diagrams. Superelevation diagrams may be included on the grid profile portion of the sheet where sufficient space is available and such addition will not produce sheets which are cluttered, unreadable or confusing. Where these grid inserts are used for roadbed profiles, show earthwork quantities along the bottom of the sheet.

2. For consultant prepared projects for Caltrans or local agency, use the cell named AC = FUPLN2 for the border sheet. For the partial profile grid inserts, use the cells described in Note 1.

3. Two new additional grid inserts are available for use with these border sheets to depict drainage profiles, sewer profiles, etc. Their cell names are AC = GRID3 and AC = GRID4.

BASIC CONFIGURATION FOR FULL USE OF GENERIC BORDER SHEETS

FIGURE 2-2I

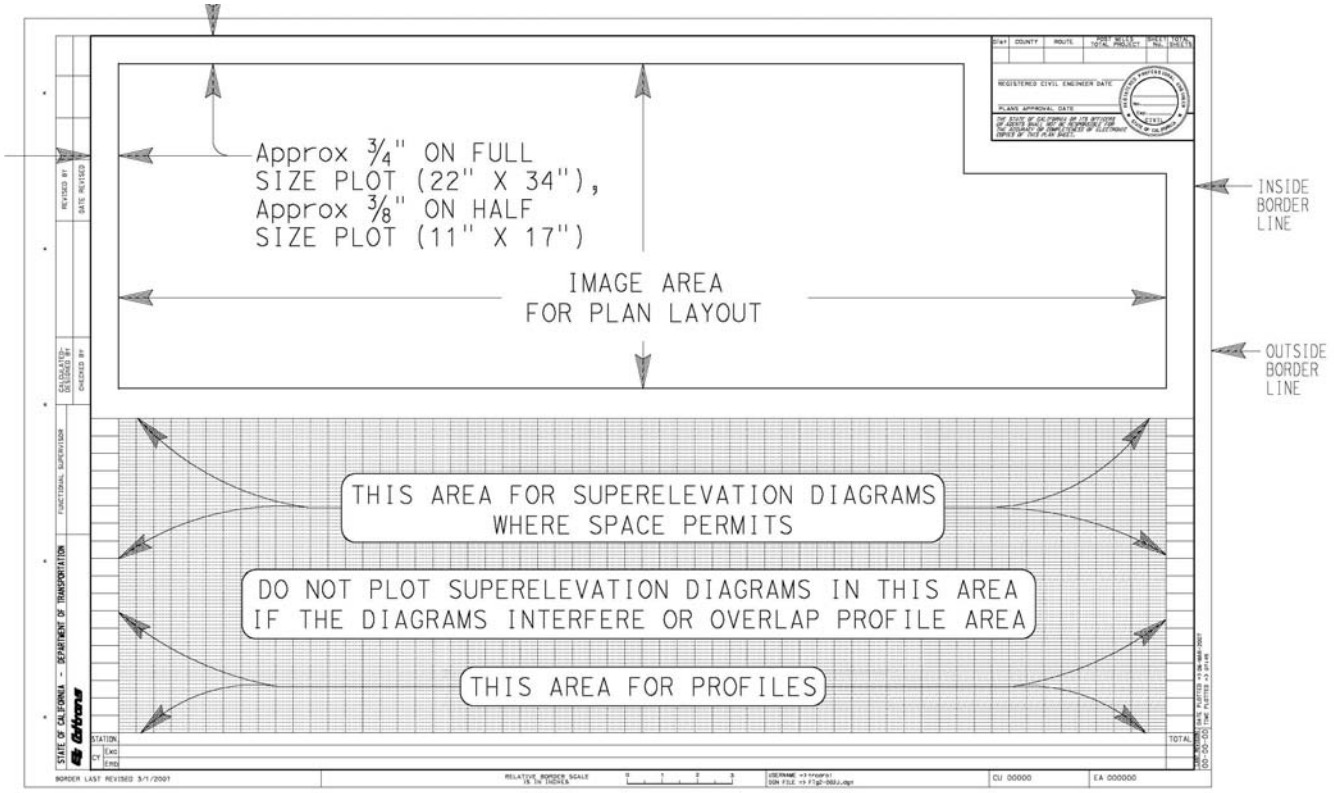


GENERIC BORDER SHEET

- 22" x 34" outside border line dimension for full size plot
- Never extend the drawing, details, tables or notes beyond sheet border or into the margin area
- Use the area in the lower right corner of sheet for the approved sheet name and sheet identification code as provided in Section 2-1.8 of this manual. Do not enclose sheet name, sheet ID code and number in a box. Two other items may be used in this area. They are a subtitle, if pertinent to the project, and plot scale.
- Use match lines with no overlap from sheet to sheet where plan layouts are shown.
- Do not place the border at various scales to accommodate stationing (For usable scales, see Section 2-1.3 of this manual).
- The length of stationing that can be shown within the horizontal image area at a plot scale of 1" = 50' scale is approximately 1500 feet.
- Underneath the outside border line is a plot marker and plot shape. These can help automate plotting. The attributes associated with these are Level 10, Color 252, Line Code 7, and Weight 0. The outside border line on all contract bid plan sheets, regardless of format (tiff, pdf or hard copy) must be visible.

BASIC CONFIGURATION FOR USE OF COMBINATION PLAN AND PROFILE SHEET

FIGURE 2-2J



PLAN AND PROFILE SHEET

- 22" x 34" outside border line dimension for full size plot
- Never extend the drawing, details, tables or notes beyond sheet border or into the margin area
- Use match lines with no overlap from sheet to sheet for plan layouts shown
- Use the area in the lower right corner of sheet for the approved sheet name and sheet ID code as provided in Section 2-1.8 of this manual. Do not enclose sheet name, sheet ID code and number in a box. Two other items may be used in this area. They are a subtitle, if pertinent to the project, and plot scale. The grid lines do not need to be removed where this listed information is placed.
- Do not place the border at various scales to accommodate stationing (For usable scales, see Section 2-1.3 of this manual)
- The length of stationing that can be shown within the horizontal image area at a plot scale of 1" = 50' scale is approximately 1500 feet
- The grid portion (lower half) of the sheet is to be used for profiles, superelevation diagrams and listing of earthwork quantities along the bottom of the sheet
- See Figure 2-2I of this manual regarding sheet plotting

2-1.6 Electronically-Generated Plan Sheet Signatures and Project Development Names

General

The California Board of Professional Engineers and Land Surveyors recognize electronically-generated seals as an acceptable form of the professional seal. Federal and State laws allow the use of electronically-generated signatures. Electronically-generated seals and signatures include those affixed to documents through the use of CADD programs and digital methods.

Title Sheet Signatures

The title sheet of the project plans shall have the license seal and signature of the lowest classification licensed person in responsible charge for preparation of the entire project. Except for the design oversight approval information required on consultant prepared projects for Caltrans (see Figure 2-7), only one license seal and number with associated signature of the person in responsible charge for preparation of the entire project shall appear on the title sheet. The printed name, registration number and license expiration date shall appear within the generic registration seal on the line adjacent to the seal. The signature shall be electronically affixed to the title sheet. In all cases, the words "Registered Civil Engineer" or equivalent designation must appear with the registrant's signature. See Figures 2-3, 2-4, and 2-5 for title sheet signature and license seal information.

Where a consultant prepares a project for Caltrans or where a firm or local agency finances and prepares the entire project, their name and address may be placed in the lower right-hand corner of the title sheet (see Figure 2-4).

A consultant, that prepares the entire project for a permittee or local agency, shall place the company name and address in the location shown in Figure 2-5. Logos, telephone numbers, or artwork is not permitted.

Title Sheet Project Development Names

For projects prepared by Caltrans, the printed name of the individual providing oversight of the Caltrans engineer involved in the development of the entire project shall be placed in the "Design Engineer" name block space located in the lower left margin of the title sheet. The printed name of the Caltrans project manager shall be placed in the "Project Manager" name block space located in the lower left margin of the title sheet. See Figure 2-6 for project development names required on the title sheet of Caltrans prepared projects. Printed names included in the name blocks shall not have any designation indicating professional status.

For projects prepared by consultants for Caltrans or local agencies, the printed name of the individual in the consultant company responsible for providing oversight of the consultant project engineer involved in the development of the entire project shall be placed in the "Consultant Design Engineer" name block space located in the lower left margin of the title sheet. The Caltrans engineer providing design oversight approval shall have their printed name, signature, registration number, registration expiration date, and date of signature included in the block spaces located in the left margin of the title sheet. The signature shall be electronically affixed to the title sheet. The design oversight approval note must not be removed. See Figure 2-7 for project development names required on the title sheet of consultant prepared projects.

Individual Plan Sheet Signature

Individual project plan sheets, other than the title sheet, shall have the license seal and signature of the licensed civil engineer, electrical engineer, mechanical engineer, geologist, architect or landscape architect who is knowledgeable about, and in responsible charge for developing that plan. Licensed traffic engineers are not authorized to sign and seal plans. Only one license seal and number with associated signature shall appear on the sheet. The printed name, registration number and license expiration date shall appear within the generic registration seal. The registrant's signature and date signed shall be outside the registration seal and within the signature block on the line provided in the upper right hand corner of the sheet. The signature shall be electronically affixed to the plan sheet. In all cases, the words "Registered Civil Engineer" or equivalent designation must appear with the registrant's signature. Do not add job titles such as "Utility Engineer," "Traffic Engineer," "Project Studies Engineer," etc. See Figure 2-8 for individual plan sheet signature and license seal information for Caltrans prepared projects.

Where a consultant prepares the individual plan sheet for Caltrans or a permittee or local agency or the individual plan sheet is prepared by a local agency, their company name and address shall be place in the location shown in Figure 2-9. Logos, telephone numbers, or artwork is not permitted.

Where the work shown on the individual plan sheet is financed and prepared by a permittee or local agency, their name and address shall be placed in the location shown in Figure 2-9. Logos, telephone numbers, or artwork is not permitted.

Individual Plan Sheet Development Names

For projects prepared by Caltrans, individual project plan sheets, other than title sheets, shall have the printed name of the person in the functional unit providing oversight of the registered engineer and individuals involved in the development of the plan sheet. For roadway plan sheets, the names are to be placed in name block spaces located in the left margin of the sheet. For Office of Structure Design plan sheets, the printed names of individuals involved in the development of the plan sheet are to be placed in the spaces provided on the structure plan sheet borders. Printed names included in name blocks of individual plan sheets shall not have any designation indicating professional status. Do not place additional name blocks other than those shown on the approved sheet borders. See Figure 2-10 for project development names required on individual plan sheets of Caltrans prepared projects.

For projects prepared by consultants for Caltrans or local agencies, the printed name of the individual in the consultant company responsible for providing oversight of the consultant project engineer who developed the roadway plan sheet shall be placed in the "Consultant Functional Supervisor" name block space located in the lower left margin of the plan sheet. See Figure 2-11 for project development names required on individual roadway plan sheets of consultant prepared projects.

Structure plans for externally developed projects have specific sheet borders to provide design oversight information.

Structure General Plan Sheet Signature and Structure Development Names

The general plan for a structure shall have the license seal and signature of the lowest classification licensed person in responsible charge for preparation of the plans for an entire structure. Only one licensed seal and number with associated signature shall appear on the sheet. The printed name, registration number and license expiration date shall appear within the generic registration seal. The registrant's signature and date signed shall be outside the registration seal and within the signature block on the line provided in the upper right hand corner of the sheet. The signature shall be electronically affixed to the general plan sheet. In all cases, the words "Registered Civil Engineer" or equivalent designation must appear with the registrant's signature. The signature of the design engineer and the printed names of individuals involved in the development of the general plan sheet are to be placed in the spaces provided on the structure general plan sheet.

Caltrans Standard Plan Sheets

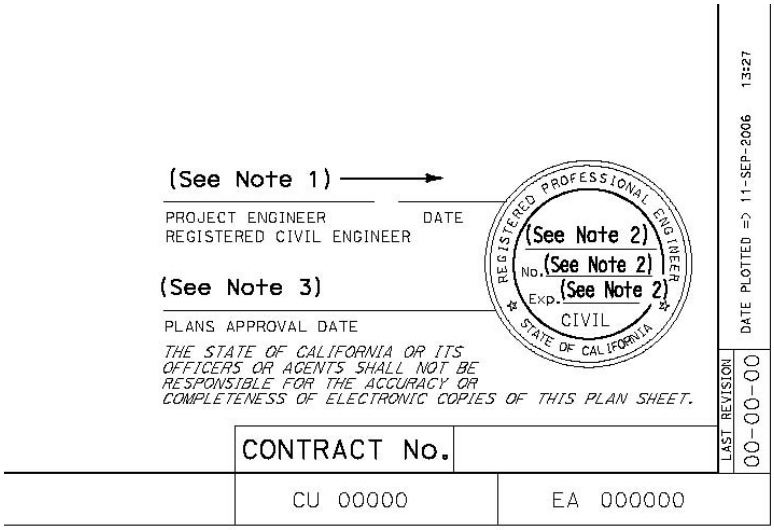
Standard Plan sheets, including revised and new Standard Plan sheets, are to be signed by the lowest classification licensed person in responsible charge of preparation of the individual standard plan sheet.

Standard Drawings from Other Agencies

Standard drawings of other agencies, when applicable to the project, shall be included as part of the project plans. Reference only to the agency standard drawing number is not acceptable. Such incorporated standard drawings shall be legible when reduced to the contract bid document size of 11" x 17". They shall have the signature, date signed and seal of the lowest classification licensed person in responsible charge of preparation of the plans. Generally, the Caltrans project engineer will sign these sheets.

TITLE SHEET SIGNATURE FOR CALTRANS PREPARED PROJECTS
(Lower Right Corner of Title Sheet)

FIGURE 2-3



GENERAL:

The title sheet of the project plans shall be signed by the lowest classification licensed person in responsible charge of preparation of the entire project. Only one seal with associated signature shall appear on the title sheet. Additional seal, license number and signature of supervisors and managers shall not be placed on the title sheet.

NOTES:

1. Signature and date signed of person in responsible charge of preparation of the entire project. Add date signed (month/day/year, e.g. 10/10/07).

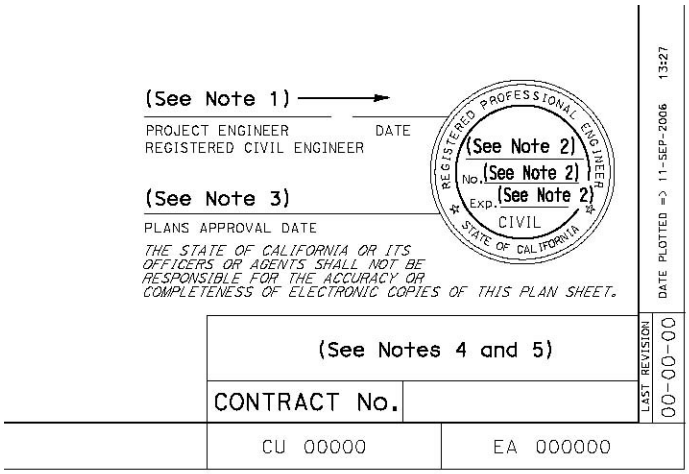
2. Name, registration number and license expiration date of person whose signature is affixed to this sheet (See Note 1). Use FT =3, TH = 7, TW = 7 or less depending on the length of the name. The name of individuals with long first and last names may be placed as two lines within the space provided.

3. Except for AADD projects, the plans approval date will be added in the Division of Engineering Services-Office Engineer.

TITLE SHEET SIGNATURE FOR A PROJECT PREPARED BY CONSULTANT FOR CALTRANS OR A PROJECT PREPARED BY A LOCAL AGENCY

(Lower Right Corner of Title Sheet)

FIGURE 2-4



GENERAL:

The title sheet of the project plans shall be signed by the lowest classification licensed person in responsible charge of preparation of the entire project. Only one seal with associated signature shall appear on the title sheet. Additional seal, license number and signature of supervisors and managers shall not be placed on the title sheet.

NOTES:

1. Signature and date signed of person in responsible charge of preparation of the entire project. Add date signed (month/day/year, e.g. 10/10/07).

2. Name, registration number and license expiration date of person whose signature is affixed to this sheet (See Note 1). Use FT =3, TH = 7, TW = 7 or less depending on the length of the name. The name of individuals with long first and last names may be placed as two lines within the space provided.

3. Except for AADD projects, the plans approval date will be added in the Division of Engineering Services-Office Engineer.

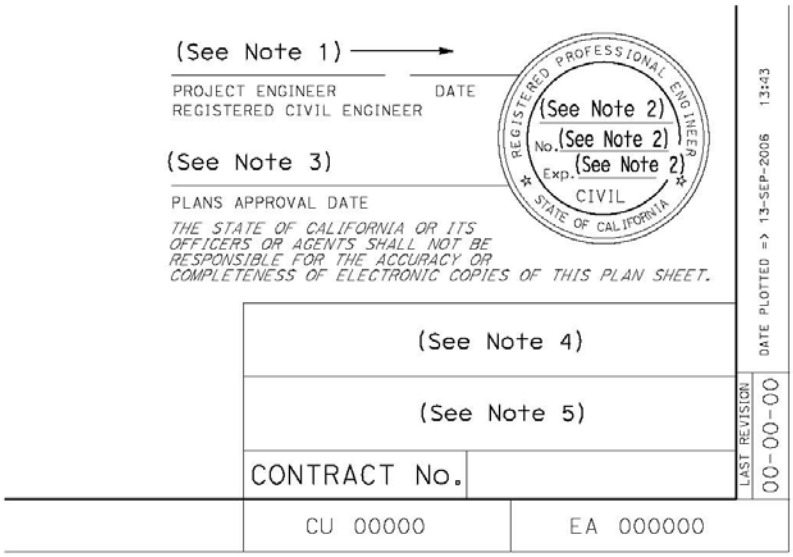
4. Where a consultant prepares the entire project for Caltrans, the name and address of the consultant shall be placed in this location. Use FT =3, TH = 6, TW = 6.

5. Where the entire project is financed and prepared by a permittee or agency, the name and address of the permittee or agency shall be placed in this location. Use FT =3, TH = 6, TW = 6.

6. Only the name and address of the permittee or agency or consultant, as applicable, responsible for the project shall be shown. No logos, phone numbers or artwork.

TITLE SHEET SIGNATURE FOR A PROJECT PREPARED BY A CONSULTANT FOR A PERMITEE OR LOCAL AGENCY
(Lower Right Corner of Title Sheet)

FIGURE 2-5



GENERAL:

The title sheet of the project plans shall be signed by the lowest classification licensed person in responsible charge of preparation of the entire project. Only one seal with associated signature shall appear on the title sheet. Additional seal, license number and signature of supervisors and managers shall not be placed on the title sheet.

NOTES:

1. Signature and date signed of person in responsible charge of preparation of the entire project. Add date signed (month/day/year, e.g. 10/10/07).

2. Name, registration number and license expiration date of person whose signature is affixed to this sheet (See Note 1). Use FT =3, TH = 7, TW = 7 or less depending on the length of the name. The name of individuals with long first and last names may be placed as two lines within the space provided.

3. Except for AADD projects, the plans approval date will be added in Division of Engineering Services-Office Engineer.

4. Where a consultant prepares the entire project for a permittee or agency, the name and address of the consultant shall be placed in this location. Use FT =3, TH = 6, TW = 6.

5. The name and address of permittee or agency that hired the consultant shall be placed in this location. Use FT =3, TH = 6, TW = 6.

6. Only names and addresses of the permittee or agency or consultant responsible for the project shall be shown. No logos, phone numbers or artwork.

TITLE SHEET PROJECT DEVELOPMENT NAMES
(Left Margin of Title Sheet)

Projects Prepared by Caltrans

FIGURE 2-6

DESIGN ENGINEER	PROJECT MANAGER
(See Note 1)	(See Note 2)

(Do not add additional project development name blocks)

NOTES:

1. Printed name of the individual providing oversight of the Caltrans project engineer involved in the development of the entire project. Use FT =3, TH = 6, TW = 6. The word "Engineer" shall be removed and the appropriate word placed in the name block for nonengineering projects, e.g., Design "Architect".

2. Printed name of Caltrans project manager. Use FT =3, TH = 6, TW = 6.

Projects Prepared by Consultants

FIGURE 2-7

CONSULTANT DESIGN ENGINEER	CALTRANS DESIGN OVERSIGHT APPROVAL	REGISTRATION No.	LICENSE Exp DATE	DATE SIGNED	APPROVED AS TO IMPACT ON STATE FACILITIES AND CONFORMANCE WITH APPLICABLE STATE STANDARDS AND PRACTICES AND THAT TECHNICAL OVERSIGHT WAS PERFORMED.
(See Note 3)	(See Note 4)	←	(See Note 5)	→	

NOTES:

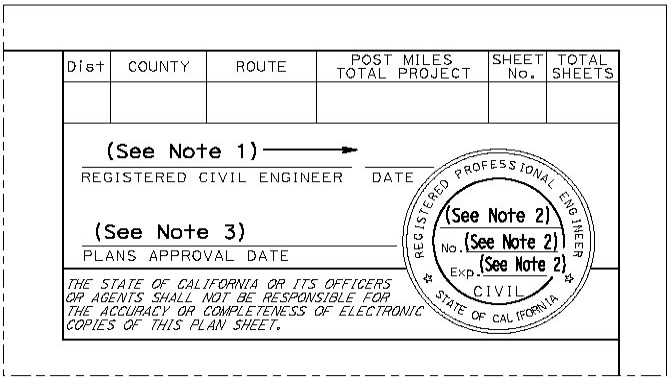
3. Printed name of the individual in the consultant's company responsible for providing oversight of the consultant project engineer involved in the development of the entire project. Use FT =3, TH = 6, TW = 6. The word "Engineer" shall be removed and the appropriate word placed in the name block for nonengineering projects, e.g., Design "Architect".

4. Printed name (use FT =3, TH = 6, TW = 6) and signature of Caltrans licensed person providing design oversight approval (for any project on a state highway).

5. Registration number, license expiration date, and date of signature of Caltrans licensed person whose signature is in the Caltrans design oversight approval name block. Use FT =3, TH = 6, TW = 6. Use month/day/year, e.g. 10/10/07 for date signed.

INDIVIDUAL PLAN SHEET SIGNATURE FOR PROJECTS PREPARED BY CALTRANS
(Upper Right Corner of Border Sheet)

FIGURE 2-8



GENERAL:

Only one seal and signature of the appropriate licensed person in responsible charge for developing the plan sheet shall appear on each individual plan sheet.

NOTES:

1. Signature and date signed of person in responsible charge for preparation of the plan sheet. Add date signed (month/day/year, e.g. 10/10/07).

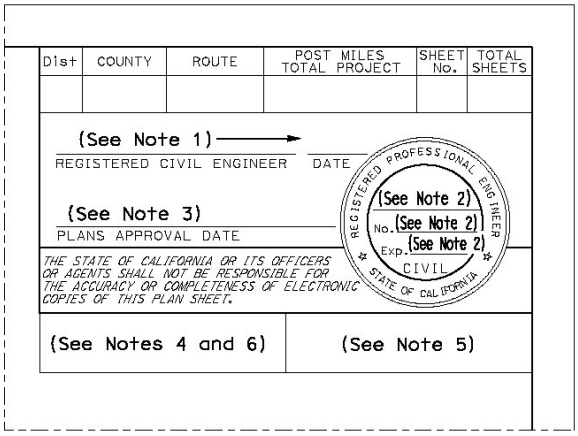
2. Name, registration number and license expiration date of person whose signature is affixed to this sheet (See Note 1). Use FT =3, TH = 7, TW = 7 or less depending on the length of the name. The name of individuals with long first and last names may be placed as 2 lines within the space provided.

3. Except for AADD projects, the plans approval date will be added in Division of Engineering Services-Office Engineer.

INDIVIDUAL PLAN SHEET SIGNATURE FOR A PROJECT PREPARED BY A CONSULTANT FOR CALTRANS, OR A PROJECT PREPARED BY A LOCAL AGENCY, OR A PROJECT PREPARED BY A CONSULTANT FOR A PERMITEE OR LOCAL AGENCY

(Upper Right Corner of Border Sheet)

FIGURE 2-9



GENERAL:

Only one seal and signature of the appropriate licensed person in responsible charge of developing the plan sheet shall appear on each individual plan sheet.

NOTES:

1. Signature and date signed of person in responsible charge for preparation of the plan sheet. Use month/day/year, e.g. 10/10/07) for date signed.

2. Name, registration number and license expiration date of person whose signature is affixed to this sheet (See Note 1). Use FT =3, TH = 7, TW = 7 or less depending on the length of the name. The name of individuals with long first and last names may be placed as 2 lines within the space provided.

3. Except for AADD projects, the plans approval date will be added in Division of Engineering Services-Office Engineer.

4. Where a consultant prepares the plan sheet for Caltrans or a permittee or local agency, the name and address of the consultant shall be placed in this location. Use FT =3, TH = 6, TW = 6.

5. The name and address of the permittee or local agency that hired the consultant shall be placed in this location. Use FT =3, TH = 6, TW = 6.

6. Where the work shown on the plan sheet is financed and prepared by a permittee or agency, the name and address of the permittee or agency shall be placed in this location. Use FT =3, TH = 6, TW = 6.

7. Only names and addresses of the local agency and consultant responsible for the project shall be shown. No logos, phone numbers or artwork.

INDIVIDUAL PLAN SHEET PROJECT DEVELOPMENT NAMES
(Left Margin of Border Sheet)

Projects Prepared by Caltrans

FIGURE 2-10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	(See Note 3)	REVISED BY	(See Note 4)
Caltrans	(See Note 1)	(See Note 2)	CHECKED BY	(See Note 3)	DATE REVISED	(See Note 4)

NOTES:

1. Name of the functional area responsible for development of the plan sheet., e.g., DESIGN, TRAFFIC OPERATIONS, etc. Where one Caltrans district develops the plan sheet for another Caltrans district, the functional area shall be preceded with the preparer's district number, e.g., 01-DESIGN.

2. Printed name of the person in the functional unit responsible for providing oversight of the registered engineer who developed the plan sheet. Use FT =3, TH = 6, TW = 6.

3. Printed name of person who calculated or designed the information on the sheet. Printed name of person who checked the designed information and/or quantities on the sheet. The name of the person responsible for the work indicated must be placed in each name block. Use FT =3, TH = 6, TW = 6.

4. Printed initials of the person responsible for any design or quantity revisions on the sheet. Use month, day and year, e.g., 10/10/07 for date revised. Use FT =3, TH = 6, TW = 6

5. Structure plan sheet borders have other name block formats for Caltrans prepared projects and are available at this web site:
   http://www.dot.ca.gov/hq/oppd/cadd/rsc_files/webpage.htm

Projects Prepared by Consultants

FIGURE 2-11

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	(See Note 8)	REVISED BY	(See Note 9)
Caltrans	(See Note 6)	(See Note 7)	CHECKED BY	(See Note 8)	DATE REVISED	(See Note 9)

NOTES:

6. No entry is to be made in this name block when the plan sheet is prepared by a consultant.

7. Printed name of the person in the consultant's functional unit responsible for providing oversight of the registered engineer who developed the plan sheet. Use FT =3, TH = 6, TW = 6.

8. Printed name of person who calculated or designed information on this sheet. Printed name of person in the consultant's company who checked the designed information and/or quantities on this sheet. The name of the person responsible for the work indicated must be placed in each name block. Use FT =3, TH = 6, TW = 6.

9. Printed initials of the person responsible for any design or quantity revisions on the sheet. Use month, day and year, e.g., 10/10/07 for date revised. Use FT =3, TH = 6, TW = 6.

10. Structure plan sheet borders and seed files for consultant prepared projects are available at this web site:
    http://www.dot.ca.gov/hq/oppd/cadd/rsc_files/webpage.htm

2-1.7 Project Identification Blocks and County Abbreviations

The district, county, route, post mile(s), and individual sheet numbers are to be included in the project identification block. The sheet number and total number of sheets are to be left blank for projects which are not AADD. Division of Engineering Services-Office Engineer (DES-OE) will insert the sheet number and total number of sheets. For AADD projects, include both sheet number and total number of sheets. The county or counties in which the project is located shall be abbreviated as shown in Table 2-1.6.

PROJECT IDENTIFICATION BLOCK
(Upper Right Corner of Border Sheet)

FIGURE 2-12

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Project Construction is on One Route

(a) The project consists of one location on one route with a length of construction greater than 0.2 mile. The "From…To…" format is used in the project description to describe the location. In the project identification block, use a slash between the associated post miles for begin and end of construction.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5	74.9/79.3		

(b) The project consists of two locations on one route (with individual lengths of construction 0.2 mile or greater). The "From…To…" format is used in the project description to describe each location. In the project identification block, use a slash between the associated post miles for begin and end of construction for each location and a comma between the two sets of post miles.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5	74.9/79.3, 81.2/83.5		

Project Construction is on One Route (Continued)

(c) The project consists of two locations on one route with one construction location 0.2 mile or greater in length and one construction location less than 0.2 mile (spot location). In the project description, describe the location 0.2 mile or greater in length using the "From…To…" format and describe the location less than 0.2 mile in length by using a spot location description "At…". In the project identification block, use a slash between the associated post miles for begin and end of construction for the location 0.2 mile or greater in length followed by a comma and a single post mile to describe the spot location.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5	74.9/77.6, 78.9		

(d) The project consists of two locations on one route with individual lengths of construction less than 0.2 mile (spot locations). In the project identification block, use a single post mile to describe each location separated by a comma.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
06	Fre	99	43.9, 45.7		

(e) The project consists of one location on one route with an individual length of construction less than 0.2 mile (spot location). In the project identification block, use a single post mile to describe the location.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Men	1	80.8		

(f) The project consists of one or more locations within a 0.6 mile radius of the center of a route separation. In the project identification block, use a single post mile for each route to describe the location.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	5, 118	63.4, 18.3		

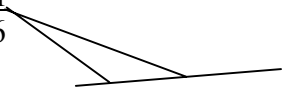
Project Construction is on One Route (Continued)

(g) The project consists of three or more locations on the same route where each location is 0.2 mile or greater. The "From…To…" format is used in the project description to describe the beginning of the first location as the begin point of construction and the end of the last location as the end point of construction. In the project identification block, use a slash between the associated post miles for begin and end of construction.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	101	0.2/7.2		

The location number and the post mile limits of each location shall be identified with leader lines on the Title Sheet strip map. Example: Location 1
PM 0.2/0.6

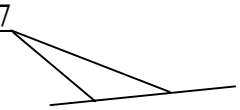


(h) The project consists of three or more locations on the same route where each location is less than 0.2 mile. The "From…To…" format is used in the project description to describe the beginning of the first location as the begin point of construction and the end of the last location as the end point of construction. In the project identification block, use a slash between the associated post miles for begin and end of construction.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	14	24.8/50.9		

Construction spot location numbers shall be graphically shown on the title sheet mapping. When the magnitude of locations does not allow room for each individual location number to be shown on the title sheet mapping (typically more than 100 locations), identify the locations by sequential grouping on the route. Use leader lines to identify the limits of the locations within each grouping. Label the origin of the leader lines with the specific location numbers (example: Locations of Construction Nos. 1 thru 17



A table with a heading of "Locations of Construction" shall be used to list all of the project's location numbers and associated post miles. The "Locations of Construction" table is to be placed on the Title Sheet when sufficient space if available. When the magnitude of locations does not allow room for the tabulation on the Title Sheet (typically more than 15 locations), the tabulation of all of the locations of construction shall be placed on a separate sheet called "Locations of Construction." The "Locations of Construction" sheet shall immediately follow the Title Sheet.

When the "Locations of Construction" sheet is used, a note is to be placed on the Title Sheet directing attention to the added sheet. Example: "The table of locations of construction is shown on the Locations of Construction sheet."

Project Construction is on Two Routes

(a) The project consists of two locations. Each location is on a different route. The length of construction for each location is 0.2 mile or greater. The "From…To…" format is used in the project description to describe each location. In the project identification block, both routes are shown with a comma between them (routes are listed in numerical order); a slash is used between the associated post miles for the begin and end of construction for each location and a comma is used between the two sets of post miles. The order of listing the post miles is to match the order of listing the routes.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	8, 67	26.2/26.5, 0.2/0.5		

(b) The project consists of two locations. Each location is on a different route. The length of construction on one route for is 0.2 mile or greater and the length of construction on the other route is less than 0.2 mile. In the project description, describe the location which is 0.2 mile or greater in length using The "From…To…" format and describe the location less than 0.2 mile in length by using a spot location description "At…". . In the project identification block, both routes are shown with a comma between them (routes are listed in numerical order); a slash is used between the associated post miles for begin and end of construction for the location 0.2 mile or greater in length followed by a comma and a single post mile to describe the spot location. The order of listing the post miles is to match the order of listing the routes.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	8, 67	26.2/26.5, 0.5		

(c) The project consists of two locations. Each location is on a different route. Each construction location is less than 0.2 mile in length. In the project description, describe each location using a spot location description "At…". In the project identification block, both routes are shown with a comma between them and a single post mile is used to describe each location separated by a comma. Routes are listed in numerical order. The order of listing the post miles is to match the order of listing the routes.

Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	8, 67	26.5, 0.5		

Project Construction is at Three or More Locations on Two or More Routes or at Three or More Locations in Two or More Counties

The following applies to the project identification block:

- Counties, in which the project is located, are listed in alphabetical order with a comma between them. The order of listing the counties may not always match the order of listing of the routes.
- Routes are listed in numerical order.
- No post miles are to be listed in the "Post Mile Block." "Var" is to be used in the "Post Miles Block." "Var" represents the various post miles of the different routes.

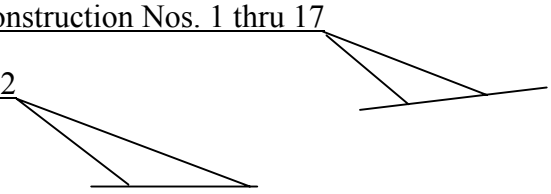
Example:

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv, SBd	18, 71, 138, 173, 189, 247	Var		

Whenever "Var" is used in the "Post Mile Block," a table with a heading of "Locations of Construction" shall be included (see instructions below). On rare occasions, a project may be in more counties than can be listed in the county identification block (generally more than six). When this occurs, use "Var" in the county identification block. When the project is on more than six routes, use "Var" in the route identification block. For these projects, the project description shall include the listing of all counties involved. The project special provisions shall list all counties and routes. A "Locations of Construction" table, as described above, shall be included in the project plans.

The following applies to the identification of the locations of construction:

- Construction location numbers shall be graphically shown on the title sheet mapping. When the magnitude of locations does not allow room for each location number to be shown on the mapping (typically more than 100 locations), identify the locations by sequential grouping on each route. Do not repeat construction location number from route to route. Use leader lines to identify the locations within each grouping. Label the origin of the leader lines with the specific location numbers. Examples: Route18 - Locations of Construction Nos. 1 thru 17



Route 71 - Locations of Construction Nos. 18 thru 32

- A table with a heading of "Locations of Construction" shall be used to list each location of construction by location number, county, route, and post mile.
- The "Locations of Construction" table is to be placed on the Title Sheet when sufficient space if available. When the magnitude of locations does not allow room for the table on the Title Sheet (typically more than 15 locations), the tabulation of all of the locations of construction shall be placed on a separate sheet called "Locations of Construction."

- The "Locations of Construction" sheet shall immediately follow the Title Sheet. When the "Locations of Construction" sheet is used in the project plan set, a note is to be placed on the Title Sheet directing attention to the added sheet. Example: "The table of locations of construction (county, route, post mile) is shown on the Locations of Construction sheet."

TABLE 2-1.6

COUNTY ABBREVIATIONS

COUNTY	COUNTY ABBREVIATION
Alameda	Ala
Alpine	Alp
Amador	Ama
Butte	But
Calaveras	Cal
Colusa	Col
Contra Costa	CC
Del Norte	DN
El Dorado	ED
Fresno	Fre
Glenn	Gle
Humboldt	Hum
Imperial	Imp
Inyo	Iny
Kern	Ker
Kings	Kin
Lake	Lak
Lassen	Las
Los Angeles	LA
Madera	Mad
Marin	Mrn
Mariposa	Mpa
Mendocino	Men
Merced	Mer
Modoc	Mod
Mono	Mno
Monterey	Mon
Napa	Nap
Nevada	Nev

COUNTY	COUNTY ABBREVIATION
Orange	Ora
Placer	Pla
Plumas	Plu
Riverside	Riv
Sacramento	Sac
San Benito	SBt
San Bernardino	SBd
San Diego	SD
San Francisco	SF
San Joaquin	SJ
San Luis Obispo	SLO
San Mateo	SM
Santa Barbara	SB
Santa Clara	SCl
Santa Cruz	SCr
Shasta	Sha
Sierra	Sie
Siskiyou	Sis
Solano	Sol
Sonoma	Son
Stanislaus	Sta
Sutter	Sut
Tehama	Teh
Trinity	Tri
Tulare	Tul
Tuolumne	Tuo
Ventura	Ven
Yolo	Yol
Yuba	Yub

Use the above list for the correct abbreviation of each county. Use upper and lower case lettering as shown.

2-1.8 Sheet Identification Codes, Sheet Names, and Plan Order

A coding system maintains sheet order during the design and construction of the project. The larger the project, the more important a coding system becomes because it facilitates sorting out specific data and is used extensively for cross referencing.

Coding shall consist of identifying each sheet of plans by the appropriate sheet identification code letter(s) and by numbering those sheets consecutively, e.g., L-1, L-2, L-3, etc. The codes such as L-1, D-1, etc., identify individual project plan sheets for cross referencing. The title sheet does not require a sheet identification code.

The sheet name such as layout, drainage plan, etc., identifies the plan for indexing.

Refer to Section 2.1 of the CADD Manual for additional instructions for the sheet naming convention (sheet identification codes, sheet names, print sequence codes, and order of sheets in a project plan set).

The project plan sheet name and sheet identification code are both required on every sheet, except the title sheet. They should be placed inside the sheet border at the lower right-hand corner of each sheet.

When Office of Structure Design prepared plans (e.g. sign structure, retaining wall, sound wall, etc.) are included in the roadway portion of the plans, the sheet name and sheet identification code shall be those listed for the roadway plans. Office of Structure Design may use their own border sheet for such plans.

Except for projects consisting of work at various locations, the project plan sheet name and sheet identification code shall be the only sheet identification shown.

Where the project consists of work at various locations, the work location number unique to that sheet should be shown in the lower right-hand corner under the sheet name. The project description, as it appears on the title sheet, shall not be repeated on individual plan sheets. The project description shall appear only on the title sheet of the project.

Where more than one type of work is being shown on an individual sheet, the combined sheet name shall follow the plan sheet name order in Section 2.1 of the CADD Manual (example: "Pavement Delineation and Sign Plan," "Drainage and Utility Plan," etc.). The sheet identification code for a plan sheet with more than one type of work shown would be the code letter for the first type of work shown in the plan sheet name (example: "PD" for Pavement Delineation and Sign Plan). Combining types of work on an individual sheet should be limited to two types of work, with the exception of layout sheets. The layout sheet may include all types of work, depending on the complexity of the project. Regardless of the various types of work included on the layout sheet, the sheet name will be "Layout" only with the L-1, L-2, L-3, etc. sheet identification code.

2-1.9 Project Plan Submittals

The plans portion of the PS&E submittal to DES-OE are electronic files consisting of a DGN and Iparm for each project plan sheet. Use a "PS&E CADD Submittal Form" and a "Project Plan Review Checklist." Fill in all the information on both forms completely and accurately to process the project in a timely manner.

Prints of the electronically transmitted CADD files are not required as part of the PS&E submittal sent to DES-OE.

The regional center or each district not within regional centers shall submit the roadway portion of the project plans to DES-OE using the above specified procedures. Roadway plans prepared by local agencies or consultants shall be sent to the appropriate regional center or district for final processing.

Office of Structure Design shall submit their portion of the project plans to DES-OE using the above specified procedures. Structure plans prepared by local agencies or consultants shall be sent to Office of Structures Design for final processing.

2-1.10 Project Plan File Formats

Standard Acceptable File Format

Caltrans only accepts 100 percent electronic submittals. The standard file format for all submissions of plans, is a MicroStation design file or DGN.

The following variations, with prior approval at approximately 60 percent completion from the Division of Design, Office of CADD and Engineering GIS Support, will also be acceptable for PS&E submittal, under these specific circumstances:

- DGN format files with imbedded or imported raster data (aerial photographs or digital pictures). Raster data should be limited to detail sheets that require enhancing or emphasizing of a detail or a unique location (i.e. toll plaza at the San Francisco/Oakland Bay Bridge) that the contractor might need to see. The need for imported raster data should be based on an engineering need, not for aesthetics or a location identification need. Project plans should first and foremost be engineered plans not photogrammetric plans. Aerial photographs were designed for preliminary plans not final project plans. If aerial mapping is needed for identifying specific locations, plan sheets have been established to handle the raster data. These sheets are called "Aerial Identification" and follow the "Key Map and Line Designation" sheets. Raster data should not be used as background for other plan sheets such as layouts, drainage, utilities, pavement delineation, etc.
- Tiff or tagged image file format are acceptable where legacy plans are being considered for submission as part of a new CADD submittal. Legacy plan sheets, such as existing log of test boring and as-built data of existing structure or roadway plans for reference or location purposes, which are not available as electronic files, may be scanned into raster (Tiff) format and submitted as Tiff files for purposes of establishing a 100 percent electronic PS&E submittal. This is a single, complete plan sheet with borders intact, submitted as a tiff raster image. The legacy sheet is to be scanned, sized (cropped), de-speckled and de-skewed before submittal. The preferred size of the finished Tiff plot is 22 inches x 34 inches and for special circumstances the maximum allowable size is 23 inches x 35 inches. These files will be raster edited.

Unacceptable Formats:

- Hard Copy Originals
- Reference Files (neither vector nor raster)
- Cadd Generated Raster- Any file that was created as a ***DGN*** file, but converted to raster for convenience or expediency, will not be accepted for PS&E Submittal.
- Models- (submittals must be one DGN file for each project plan sheet.)
- AutoCad Files- files started with AutoCad (.dwg or .dxf) must be converted into a MicroStation file (DGN) under the direction of the engineer of record.

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